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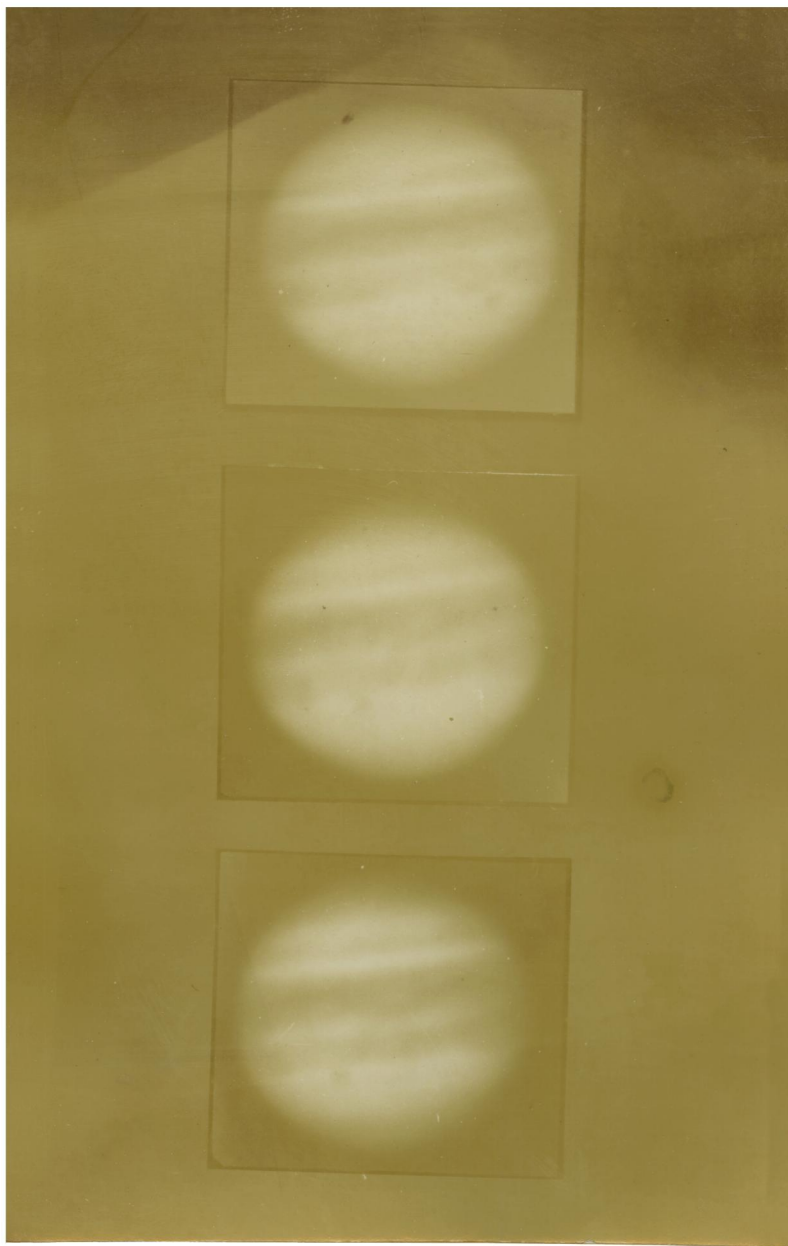
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JUPITER, MARCH 22, 1897.

(Taken at the Lick Observatory with an 18-inch Reflecting Telescope.)

	8 ^h 22 ^m 0 ^s to 40 ^s	} P. S. T.
Exposure Times	10 11 0 to 40	
	10 16 0 to 40	

PUBLICATIONS
OF THE
Astronomical Society of the Pacific.

VOL. IX.

SAN FRANCISCO, OCTOBER 1, 1897.

No. 58.

PHOTOGRAPHS OF *JUPITER*.

[Taken with an 18-inch Reflecting Telescope.]

BY J. M. SCHAEBERLE.

The three silver prints of *Jupiter* given in the present number are contact copies of negatives taken with the 18-inch reflecting telescope described in Volume VII of these *Publications*. The particular secondary for focal images of this scale can only be used advantageously when there is no wind and when the seeing is first-class. The equivalent focal length, corresponding to the linear dimension of the image, is about 650 feet.

Held at a distance of ten inches from the eye, the effect, so far as simple magnification is concerned, is the same as a view of *Jupiter* through a telescope magnifying 780 diameters. With such a power, the visual observations of planetary details are ordinarily unsatisfactory; in view, therefore, of the improvement (mentioned farther on) in the definition of the 18-inch mirror, which will surely result from the increase in the principal focal length, these photographs are of peculiar interest.

I recently discovered a most serious optical defect which is common to all parabolic mirrors.* The magnitude of this defect increases rapidly as the angular aperture of the mirror increases. In order to obtain results which are not seriously affected by this error, the ratio of focal length to aperture should never be less than, say, fourteen to one. I have decided to regrind and refigure the 18-inch reflector, and make the ratio of focal length to aperture about twice as great as it is at present.

* See *Astronomical Journal*, No. 413.

The silver prints were made by Mr. WILLIAM PAULI of the Lick Observatory. Much of the detail in the original negative is, of course, lost in the paper prints. By comparing the three photographs, allowing for the rotation of the planet, no mistake can be made as to whether a given marking actually corresponds to a surface feature of the planet, or whether it is due simply to a defect in the plate.

J. M. SCHAEBERLE.

LICK OBSERVATORY, University of California,
September 20, 1897.

PLANETARY PHENOMENA FOR SEPTEMBER,
OCTOBER, NOVEMBER AND DECEMBER, 1897.

BY PROFESSOR MALCOLM MCNEILL.

SEPTEMBER.

The Sun crosses the equator and autumn begins at about 11 A.M., P. S. T., on September 22d.

Mercury is an evening star at the beginning of the month, having passed greatest east elongation on August 26th, but it is too near the Sun for naked-eye observations, and passes inferior conjunction on the morning of September 22d. It then becomes a morning star and moves rapidly away from the Sun, so that by the end of the month it rises more than an hour before sunrise, and can be easily seen under good-weather conditions. It is in conjunction with *Jupiter* on September 27th, but the conjunction is not so close, nor are the planets as well situated as they will be at the conjunction which will take place in October.

Venus is a morning star, rising about three hours before sunrise. During the month it moves thirty-six degrees east and nine degrees south through the constellations *Cancer* and *Leo*. On the night of September 24-25th it is very near the first magnitude star *Regulus* (α *Leonis*), passing the star on the north at a distance of about half of the Moon's diameter.

Mars is still an evening star, but it is rapidly nearing conjunction with the Sun, and it can scarcely be seen without telescopic aid, except perhaps during the first few days of the month, when it sets about two hours after sunset. It is also nearly at its greatest distance from the Earth, and least brilliancy. It moves